

AMENDMENTS TO THE CLAIMS

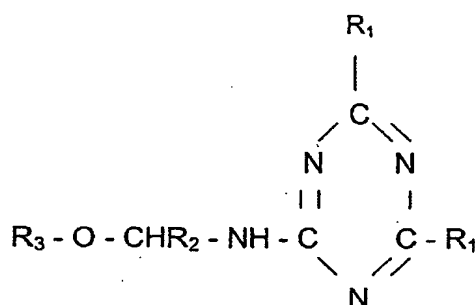
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-11 (cancelled)

Claim 12 (new): A prepreg for fiber composites having high strength and resilience, wherein the prepreg comprises from 50 to 85% by mass of sheet-like textile structures and from 15 to 50% by mass of polyaminotriazine ethers containing carbamic ester groups and is based on

A) aminotriazine ethers of the structure



wherein R₁ is -NH₂, -NH-CHR₂-OH, -NH-CHR₂-O-R₃, -NH-CHR₂-O-R₄-OH, -CH₃, -C₃H₇, -C₆H₅, -OH, phthalimido, succinimido-, -NH-CO-C₅-C₁₈-alkyl, -NH-C₅-C₁₈-alkylene-OH, -NH-CHR₂-O-C₅-C₁₈-alkylene-NH₂, or -NH-C₅-C₁₈-alkylene-NH₂,

wherein R₂ is -H, or -C₁-C₇-alkyl,

wherein R₃ is -C₁-C₁₈-alkyl, or -R₄-OH,

wherein R₄ is -CH(CH₃)-CH₂-O-C₂-C₁₂-alkylene-O-CH₂-CH(CH₃)-, -CH(CH₃)-CH₂-O-C₂-C₁₂-arylene-O-CH₂-CH(CH₃)-, -[CH₂-CH₂-O-CH₂-CH₂]_n-,

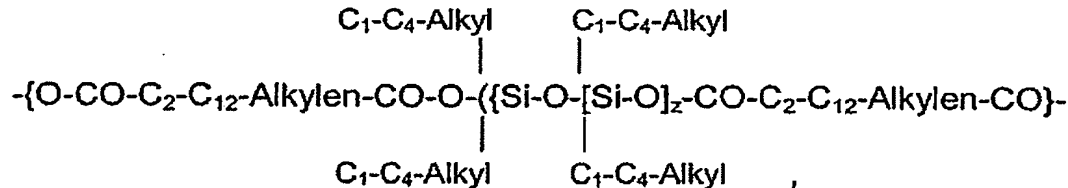
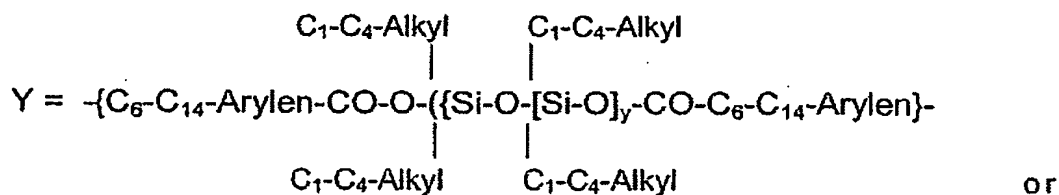
-[CH₂-CH(CH₃)-O-CH₂-CH(CH₃)]_n-,
 -[O-CH₂-CH₂-CH₂-CH₂]_n-,
 -[(CH₂)₂₋₈-O-CO-C₆-C₁₄-arylene-CO-O-(CH₂)₂₋₈]_n-,
 -[(CH₂)₂₋₈-O-CO-C₂-C₁₂-alkylene-CO-O-(CH₂)₂₋₈]_n-,
 where n = 1 to 200,

- polyester sequences containing siloxane groups of the type -

[(X)_r-O-CO-(Y)_s-CO-O(X)_r]-, wherein

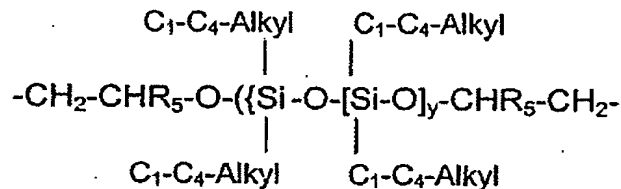
X = {(CH₂)₂₋₈-O-CO-C₆-C₁₄-arylene-CO-O-(CH₂)₂₋₈}-,

{(CH₂)₂₋₈-O-CO-C₂-C₁₂-alkylene-CO-O-(CH₂)₂₋₈}-,



wherein r = 1 to 70, s = 1 to 70 and y = 3 to 50,

- polyether sequences which contain siloxane groups and are of the type



wherein R₅ = H or C₁-C₄-alkyl and y = 3 to 50,

- sequences based on alkylene oxide adducts of melamine of the type comprising 2-amino-4,6-di-C₂-C₄-alkyleneamino-1,3,5-triazine sequences,

- phenol ether sequences based on dihydric phenols and C₂-C₈-diols of the type comprising -C₂-C₈-alkylene-O-C₆-C₁₈-arylene-O-C₂-C₈-alkylene sequences,

and/or

B) mixtures of from 10 to 90% by mass of aminotriazine ethers A) and from 90 to 10% by mass of polyaminotriazine ethers having molar masses of from 300 to 5000, the polyaminotriazine ethers being formed by thermal autocondensation of aminotriazine ethers A),

and

C) isocyanates of the formula R₆(N = C = O)₂, wherein R₆ = C₆-C₁₄-arylene, C₄-C₁₈-alkylene and/or C₅-C₈-cycloalkylene, and/or oligomeric polyesters or polyethers having terminal isocyanate groups and molar masses of from 200 to 5000,

wherein the molar ratio of triazine segment to carbamic ester groups is from 1 : 1 to 1 : 4.

Claim 13 (new): The prepreg as claimed in claim 12, wherein the textile substrate materials are woven fabrics or nonwovens, such as woven fabrics or nonwovens selected from the group consisting of glass fibers, carbon fibers, polyamide fibers, polyester fibers, polypropylene fibers and thermosetting plastic fibers.

Claim 14 (new): The prepreg as claimed in claim 12, wherein the ratio of aldehyde component to triazine component is from 1 : 1 to 3 : 1 in the polyaminotriazine ethers containing carbamic ester groups.

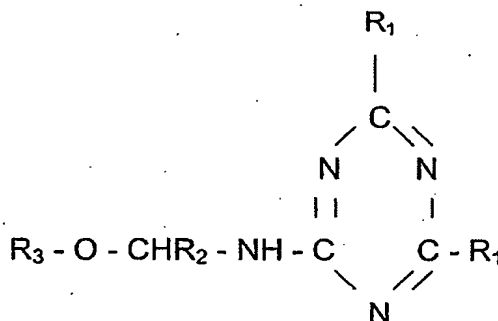
Claim 15 (new): The prepreg as claimed in claim 12, wherein the polyaminotriazine ethers containing carbamic ester groups are polyaminotriazine ethers based on at least one of melamine, formaldehyde, methanol and diisocyanates of the type $R_6(N = C = O)_2$.

Claim 16 (new): The prepreg as claimed in claim 12, wherein the polyaminotriazine ethers containing carbamic ester groups are polyaminotriazine ethers based on

- B) mixtures of from 5 to 30% by mass of aminotriazine ethers A) and from 95 to 70% by mass of polyaminotriazine ethers having molar masses of from 300 to 5000, the polyaminotriazine ethers being formed by thermal autocondensation of aminotriazine ethers A), and
- C) isocyanates of the formula $R_6(N = C = O)_2$, wherein $R_4 = C_4-C_{18}$ -alkylene and/or C_5-C_8 -cycloalkylene, and/or oligomeric polyesters or polyethers having terminal isocyanate groups and molar masses of from 200 to 5000.

Claim 17 (new): A process for the production of prepregs for fiber composites having high strength and resilience, wherein prepregs which comprise from 50 to 85% by mass of sheet-like textile structures and from 15 to 50% by mass of polyaminotriazine ethers containing carbamic ester groups are produced by a melt application method in which mixtures of

- A) aminotriazine ethers of the structure



wherein R₁ is -NH₂, -NH-CHR₂-OH, -NH-CHR₂-O-R₃, -NH-CHR₂-O-R₄-OH, -CH₃, -C₃H₇, -C₆H₅, -OH, phthalimido, succinimido-, -NH-CO-C₅-C₁₈-alkyl, -NH-C₅-C₁₈-alkylene-OH, -NH-CHR₂-O-C₅-C₁₈-alkylene-NH₂, or -NH-C₅-C₁₈-alkylene-NH₂,

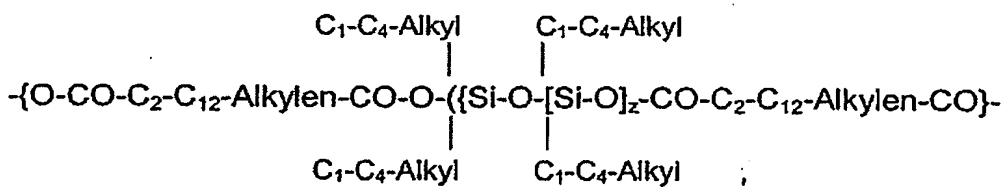
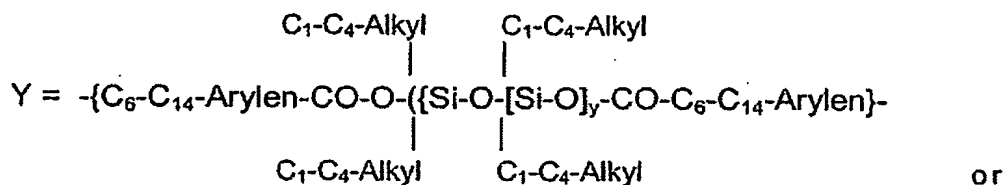
wherein R₂ is -H, or -C₁-C₇-alkyl,

wherein R₃ is -C₁-C₁₈-alkyl, or -R₄-OH,

wherein R₄ is -CH(CH₃)-CH₂-O-C₂-C₁₂-alkylene-O-CH₂-CH(CH₃)-, -CH(CH₃)-CH₂-O-C₂-C₁₂-arylene-O-CH₂-CH(CH₃)-, -[CH₂-CH₂-O-CH₂-CH₂]_n-, -[CH₂-CH(CH₃)-O-CH₂-CH(CH₃)]_n-, -[O-CH₂-CH₂-CH₂-CH₂]_n-, -[(CH₂)₂₋₈-O-CO-C₆-C₁₄-arylene-CO-O-(CH₂)₂₋₈]_n-, -[(CH₂)₂₋₈-O-CO-C₂-C₁₂-alkylene-CO-O-(CH₂)₂₋₈]_n-, where n = 1 to 200,

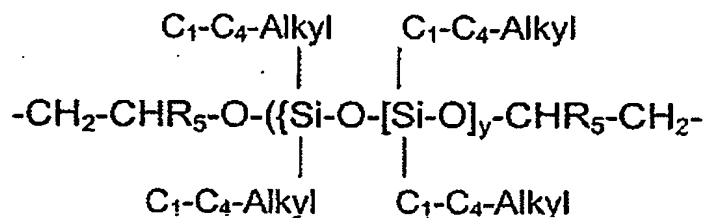
- polyester sequences containing siloxane groups of the type - [(X)_r-O-CO-(Y)_s-CO-O(X)_r]-, wherein

X = {(CH₂)₂₋₈-O-CO-C₆-C₁₄-arylene-CO-O-(CH₂)₂₋₈}-, {(CH₂)₂₋₈-O-CO-C₂-C₁₂-alkylene-CO-O-(CH₂)₂₋₈}-,



wherein $r = 1$ to 70, $s = 1$ to 70 and $y = 3$ to 50,

- polyether sequences containing siloxane groups of the type



wherein $R_5 = \text{H}$ or $\text{C}_1\text{-C}_4\text{-alkyl}$ and $y = 3$ to 50,

- sequences based on alkylene oxide adducts of melamine of the type comprising 2-amino-4,6-di- $\text{C}_2\text{-C}_4\text{-alkyleneamino-1,3,5-triazine}$ sequences, or
- phenol ether sequences based on dihydric phenols and $\text{C}_2\text{-C}_8\text{-diols}$ of the type comprising $\text{-C}_2\text{-C}_8\text{-alkylene-O-C}_6\text{-C}_{18}\text{-arylene-O-C}_2\text{-C}_8\text{-alkylene}$ sequences,

and/or

B) mixtures of from 10 to 90% by mass of aminotriazine ethers A) and from 90 to 10% by mass of polyaminotriazine ethers having molar masses of from 300 to 5000, the polyaminotriazine ethers being formed by thermal autocondensation of aminotriazine ethers A),

and

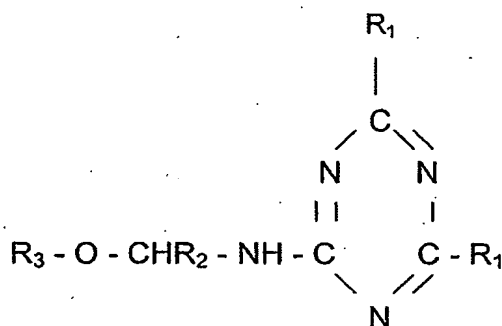
C) isocyanates of the formula $R_6(\text{N}=\text{C}=\text{O})_2$, where $R_6 = \text{C}_6\text{-C}_{14}\text{-arylene}$, $\text{C}_4\text{-C}_{18}\text{-alkylene}$ and/or $\text{C}_5\text{-C}_8\text{-cycloalkylene}$, and/or oligomeric polyesters or polyethers having terminal isocyanate groups and molar masses of from 200 to 5000,

wherein the molar ratio of diisocyanate to the sum of imino groups and amino groups in the triazine sequence is from 0.15 : 1 to 0.65 : 1, and it being possible for the mixtures to contain from 0.05 to 2% by mass, based on the aminotriazine ethers, of latent curing agents,

are melted at temperatures of from 85 to 130°C, reacted, and applied to textile substrate materials.

Claim 18 (new): A process for the production of preregs for fiber composites having high strength and resilience, wherein preregs having from 50 to 85% by mass of sheet-like textile structures and from 15 to 50% by mass of polyaminotriazine ethers containing carbamic ester groups are produced by a liquid application method wherein dispersions in C₅-C₁₂-hydrocarbons and/or C₃-C₁₂-ketones or solutions in dimethyl sulfoxide, dimethylformamide and/or dimethylacetamide having a solids content of from 25 to 70% by mass, comprising

A) aminotriazine ethers of the structure



wherein R₁ is -NH₂, -NH-CHR₂-OH, -NH-CHR₂-O-R₃,
 -NH-CHR₂-O-R₄-OH, -CH₃, -C₃H₇, -C₆H₅, -OH,
 phthalimido, succinimido-, -NH-CO-C₅-C₁₈-alkyl,
 -NH-C₅-C₁₈-alkylene-OH,
 -NH-CHR₂-O-C₅-C₁₈-alkylene-NH₂, or
 -NH-C₅-C₁₈-alkylene-NH₂,

wherein R₂ is -H, or -C₁-C₇-alkyl;

wherein R₃ is -C₁-C₁₈-alkyl, or -R₄-OH,

wherein R₄ is -CH(CH₃)-CH₂-O-C₂-C₁₂-alkylene-O-CH₂-CH(CH₃)-,
 -CH(CH₃)-CH₂-O-C₂-C₁₂-arylene-O-CH₂-CH(CH₃)-,
 -[CH₂-CH₂-O-CH₂-CH₂]_n-,
 -[CH₂-CH(CH₃)-O-CH₂-CH(CH₃)]_n-,
 -[O-CH₂-CH₂-CH₂-CH₂]_n-,

$-[(CH_2)_{2-8}-O-CO-C_6-C_{14}-\text{arylene}-CO-O-(CH_2)_{2-8}]_n-$,

$-[(CH_2)_{2-8}-O-CO-C_2-C_{12}-\text{alkylene}-CO-O-(CH_2)_{2-8}]_n-$,

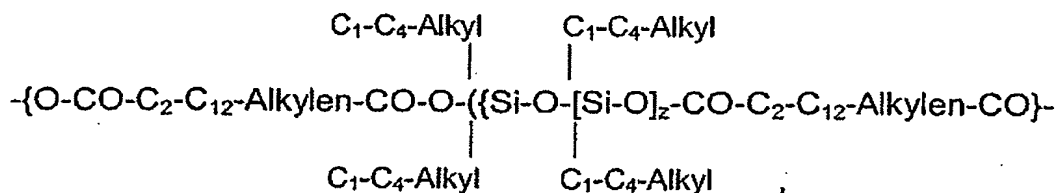
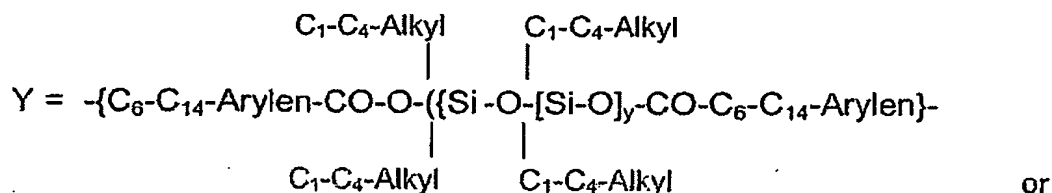
where $n = 1$ to 200 ,

- polyester sequences containing siloxane groups of the type -

$[(X)_r-O-CO-(Y)_s-CO-O(X)_r]-$, wherein

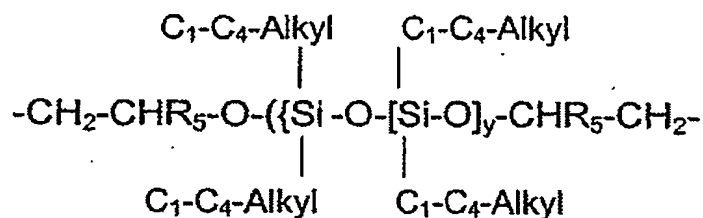
$X = \{(CH_2)_{2-8}-O-CO-C_6-C_{14}-\text{arylene}-CO-O-(CH_2)_{2-8}\}-$,

$\{(CH_2)_{2-8}-O-CO-C_2-C_{12}-\text{alkylene}-CO-O-(CH_2)_{2-8}\}-$,



wherein $r = 1$ to 70 , $s = 1$ to 70 and $y = 3$ to 50 ,

- polyether sequences containing siloxane groups and of the type



wherein $R_5 = H$ or C_1-C_4 -alkyl and $y = 3$ to 50 ,

- sequences based on alkylene oxide adducts of melamine of the type comprising 2-amino-4,6-di- C_2-C_4 -alkyleneamino-1,3,5-triazine sequences,

- phenol ether sequences based on dihydric phenols and C_2-C_8 -diols of the type comprising $-C_2-C_8$ -alkylene- $O-C_6-C_{18}$ -arylene- $O-C_2-C_8$ -alkylene sequences,

and/or

B) mixtures of from 10 to 90% by mass of aminotriazine ethers A) and from 90 to 10% by mass of polyaminotriazine ethers having molar masses of from 300 to 5000, the polyaminotriazine ethers being formed by autocondensation of triazine ethers A),
and

C) isocyanates of the formula $R_6(N = C = O)_2$,
wherein $R_6 = C_6-C_{14}$ -arylene, C_4-C_{18} -alkylene and/or C_5-C_8 -cycloalkylene, and/or oligomeric polyesters or polyethers having terminal isocyanate groups and molar masses of from 200 to 5000,

wherein the molar ratio of diisocyanate to the sum of imino groups and amino groups in the triazine sequence is from 0.15 : 1 to 0.65 : 1, and

it being possible for the mixtures to contain from 0.05 to 2% by mass, based on the aminotriazine ethers, of latent curing agents,

are applied at temperatures from 5 to 80°C to textile substrate materials and reacted at from 80 to 120°C/from 0.1 to 1 bar and dried.

Claim 19 (new): The process for the production of preregs as claimed in claim 17, wherein the aminotriazine ether used is 2,4,6-tris(methoxymethylamino)-1,3,5-triazine.

Claim 20 (new): The process for the production of preregs as claimed in claim 17, wherein the latent curing agents used are weak acids, such as

- blocked sulfonic acids,
- alkali metal salts or ammonium salts of phosphoric acid,
- C_1-C_{12} -alkyl esters or C_2-C_8 -hydroxyalkyl esters of aromatic C_6-C_{14} -carboxylic acids or inorganic acids,
- salts of melamine or guanamines with aliphatic C_1-C_{18} -carboxylic acids,
- anhydrides, monoesters or monoamides of C_4-C_{20} -dicarboxylic acids,

- monoesters or monoamides of copolymers of ethylenically unsaturated C₄-C₂₀-dicarboxylic anhydrides and ethylenically unsaturated monomers of the type comprising C₂-C₂₀-olefins and/or C₈-C₂₀-vinylaromatics, and/or
- salts of C₁-C₁₂-alkylamines or alkanolamines with aliphatic C₁-C₁₈-carboxylic acids, aromatic C₆-C₁₄-carboxylic acids or alkylaromatic carboxylic acids and inorganic acids of the hydrochloric acid, sulfuric acid or phosphoric acid type.

Claim 21 (new): A fiber composite produced using preregs as claimed in claim 12.

Claim 22 (new): The prepreg as claimed in claim 13, wherein the ratio of aldehyde component to triazine component is from 1 : 1 to 3 : 1 in the polyaminotriazine ethers containing carbamic ester groups.

Claim 23 (new): The process for the production of preregs as claimed in claim 18, wherein the aminotriazine ether used is 2,4,6-tris(methoxymethylamino)-1,3,5-triazine.

Claim 24 (new): The process for the production of preregs as claimed in claim 18, wherein the latent curing agents used are weak acids, such as

- blocked sulfonic acids,
- alkali metal salts or ammonium salts of phosphoric acid,
- C₁-C₁₂-alkyl esters or C₂-C₈-hydroxyalkyl esters of aromatic C₆-C₁₄-carboxylic acids or inorganic acids,
- salts of melamine or guanamines with aliphatic C₁-C₁₈-carboxylic acids,
- anhydrides, monoesters or monoamides of C₄-C₂₀-dicarboxylic acids,
- monoesters or monoamides of copolymers of ethylenically unsaturated C₄-C₂₀-dicarboxylic anhydrides and ethylenically unsaturated monomers of the type comprising C₂-C₂₀-olefins and/or C₈-C₂₀-vinylaromatics, and/or

- salts of C₁-C₁₂-alkylamines or alkanolamines with aliphatic C₁-C₁₈-carboxylic acids, aromatic C₆-C₁₄-carboxylic acids or alkylaromatic carboxylic acids and inorganic acids of the hydrochloric acid, sulfuric acid or phosphoric acid type.

Claim 25 (new): The process for the production of prepregs as claimed in claim 19, wherein the latent curing agents used are weak acids, such as

- blocked sulfonic acids,
- alkali metal salts or ammonium salts of phosphoric acid,
- C₁-C₁₂-alkyl esters or C₂-C₈-hydroxyalkyl esters of aromatic C₆-C₁₄-carboxylic acids or inorganic acids,
- salts of melamine or guanamines with aliphatic C₁-C₁₈-carboxylic acids,
- anhydrides, monoesters or monoamides of C₄-C₂₀-dicarboxylic acids,
- monoesters or monoamides of copolymers of ethylenically unsaturated C₄-C₂₀-dicarboxylic anhydrides and ethylenically unsaturated monomers of the type comprising C₂-C₂₀-olefins and/or C₈-C₂₀-vinylaromatics, and/or
- salts of C₁-C₁₂-alkylamines or alkanolamines with aliphatic C₁-C₁₈-carboxylic acids, aromatic C₆-C₁₄-carboxylic acids or alkylaromatic carboxylic acids and inorganic acids of the hydrochloric acid, sulfuric acid or phosphoric acid type.

Claim 26 (new): A fiber composite produced using prepregs as claimed in claim 13.

Claim 27 (new): A fiber composite produced using prepregs as claimed in claim 14.

Claim 28 (new): A fiber composite produced using prepregs as claimed in claim 15.

Claim 29 (new): A fiber composite produced using prepregs as claimed in claim 16.